ISSN 1346–7565 Acta Phytotax. Geobot. 54 (2): 105–107 (2003)

Studies of the Orchid Flora of Vanuatu: II. *Phreatia vanuatensis*, a New Species

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A new species, *Phreatia vanuatensis* Yukawa is described from Vanuatu. It is easily distinguished from the closely related *P. paleata* (Rchb. f.) Rchb. f. by the following combination of characters: 1) larger pseudobulbs and leaves; 2) a shorter, green fertile bract adherent to the ovary; 3) a clawless labellum; and 4) a densely hairy labellum.

Key words: new species, Orchidaceae, *Phreatia vanuatensis*, taxonomy, Vanuatu

Vanuatu lies in the southwest Pacific Ocean between latitudes 12-21°S and longitudes 166-170°E. The country consists of 80 islands and is surrounded by the Solomon Islands in the northwest, New Caledonia in the south, and Fiji in the east.

In 1989 Lewis & Cribb compiled the first comprehensive orchid flora of Vanuatu. Following this account, Hallé (1990), Lewis (1992), and Attie (1996) described new species and added new records from this area. Based on collections during explorations in Vanuatu and adjacent countries between 1996 and 2001 organized by Tsukuba Botanical Garden, National Science Museum and Environment Unit, Republic of Vanuatu, Hashimoto (1997, 1998), Yukawa (1998), and Yukawa & Hashimoto (1998) described new taxa and notable findings of Orchidaceae.

The genus *Phreatia* Lindl.comprises about 190 species, occurring from India and Ceylon throughout Malesia to Australia, and eastward in the Pacific to the Society Islands (Kores 1989). So far, six species are known in Vanuatu. In this account I describe a new species of *Phreatia* from this region.

Phreatia vanuatensis Yukawa, **sp. nov.** Fig. 1.

Affinis *Phreatiae paleatae* Rchb. f. est, sed pseudobulbis et foliis majoribus, bractea breviore viridula adhaerenti ad ovarium, et labello sessili dense pubescenti differt.

Type: VANUATU. Espiritu Santo, Mt. Tabwemasana, alt. 400 m, 3 November 1996, *H. Hatta s. n.*, Tsukuba Botanical Garden accession number 118563 (Holotype: TNS).

Epiphytic plant to 36 cm tall. **Rhizome** abbreviated. **Pseudobulbs** clustered, globose-ovoid, tightly covered in leaf sheaths, up to 4.2 cm long, 3.0 cm in diameter. **Leaves** 2-3; blades patent-ascending, ligulate, articulate, obliquely bilobed, subacute-acute, aristate at apex, conduplicate, glossy, middle to deep green, up to 32 cm long, 3.1 cm wide; sheaths persistent, clasping, pale green, greyish brown in age, up to 8 cm long. **Inflorescences** erect and apically nutant, axillary at the base on the foliate pseudobulbs, subdensely many-flowered, terete, middle green; peduncle 16-28 cm long with 6-7 widely spaced, clasping, tubular cataphylls; rachis 8-11 cm long; bracts adherent to ovaries,

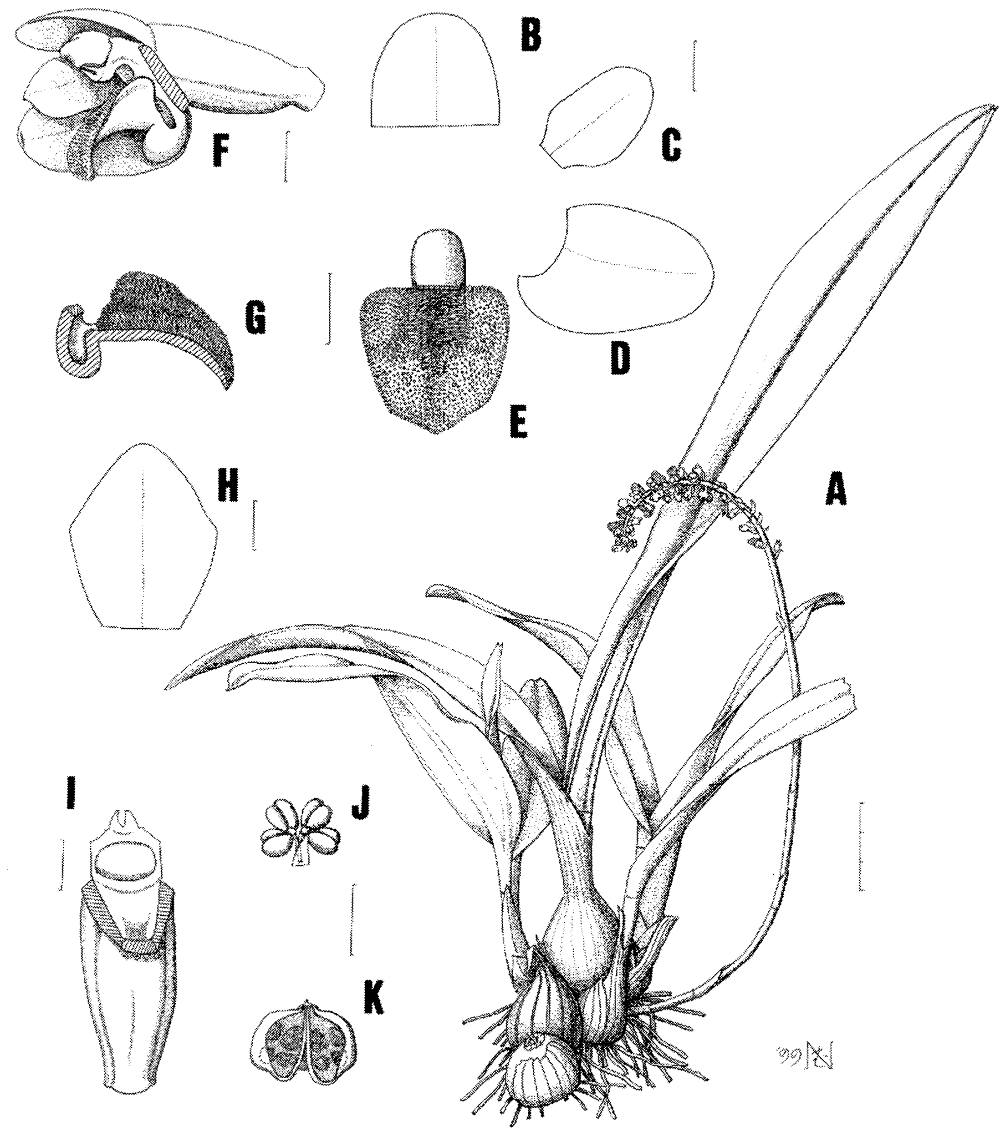

FIG. 1. *Phreatia vanuatensis* Yukawa (A-K). A. Habit; B. Dorsal sepal; C. Petal; D. Lateral sepal; E. Labellum; F. Flower, side view, petal and lateral sepal removed; G. Labellum, longitudinal section; H. Bract; I. Column and pedicellate ovary, from below; J. Pollinium; K. Operculum. Drawn from holotype (*H. Hatta s. n.*) by M. Nakajima. Scale bar = 3 cm (A) or 1 mm (B-K).

ovate-obovate, obtuse, with fragile margins, pale green stained with brown, 2.9-3.6 mm long, 2.3-2.5 mm wide. **Flowers** strongly cupped; pedicellate ovary pale green; perianth lobes and column white; operculum brownish white; pollinia yellow. **Pedicellate ovary** fusiform, weakly sulcate, 3-3.2 mm long. **Dorsal sepal** oblong-quadrate, obtuse, rounded at apex, 2.2-2.6 mm long, 2.4 mm wide. **Lateral sepals** obliquely ovate-triangular, obtuse, rounded at apex, 3.5-3.6 mm long, 2.45-2.7 mm wide. **Petals** obliquely ovate-oblong, obtuse-subacute, 2-2.2 mm long, 1.45-1.55 mm wide. **Labellum** spurred; blade oblong-triangular, obtuse-abruptly acuminate at apex, truncate at base, 2.2-2.3 mm long, 1.5-1.85 mm wide; disk densely pubescent on the adaxial surface, with longer hairs towards the base, papillate on the abaxial surface; spur subglobose, 0.6 mm long. **Column** 1.35 mm long; column foot distinct, straight, adnate to lateral sepals and labellum; clinandrium broad, firmly adnate to operculum at the abaxial margin, minutely lobed on either side of rostellum; rostellum 2-lobed, subdeltoid; stigma transverse, rectangular; operculum cordate, cucullate, obtuse, 0.65-0.85 mm long, 0.75-1 mm wide; pollinia 8.

Distribution: VANUATU, Espiritu Santo. The type collection only.

Etymology: This species is named for its country of origin.

The new species belongs to section *Saccophreatia* Schltr. in which several closely related species exist. *Phreatia paleata* (Rchb. f.) Rchb. f., also distributed in Vanuatu, shows a similar habit like *P. vanuatensis*, but can be distinguished from the latter by its smaller pseudobulbs and leaves, a longer, brown fertile bract that is not adherent to the ovary, a distinct claw of the labellum, and a sparsely haired labellum. The following species also have an morphological affinity with the new species: viz., *P. saccifera* Schltr. from New Guinea, *P. sulcata* (Blume) J. J. Sm. from Southeast Asia, and *P. morii* Hayata from Taiwan. They differ from *P. vanuatensis* in having markedly smaller pseudobulbs and a distinct claw of the labellum. *P. saccifera* and *P. sulcata* are further characterized by different shape of the spur. *P. morii* is unique in its elongated column foot.

The tiny flowers of *Phreatia* make their classification difficult. It should be noted that the stigma of *Phreatia* species broadens in accordance with aging of the flower. Therefore, the shape of column, particularly that of lateral view, also varies. Careful examination is necessary to compare reproductive parts of this genus.

I am indebted to Ernest Bani, Tamotsu Hashimoto and Tsukasa Iwashina for organizing fieldwork in Vanuatu, Chanel Sam and Pierre Cabalion for giving invaluable information, Hiroaki Hatta for providing the plant material, Mutsuko Nakajima for preparing the illustrations, and Kazuhiro Suzuki for skillful cultivation of plant material for this study. Directors and curators of L, NOU, and PVNH kindly permitted me to study herbarium specimens. Financial support of this work was provided in part by International Scientific Research Program from the Ministry of Education, Science, Sports and Culture, Japan (08041165 and 12575013).

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Received July 5, 2003, accepted October 8, 2003